



# FACT SHEET



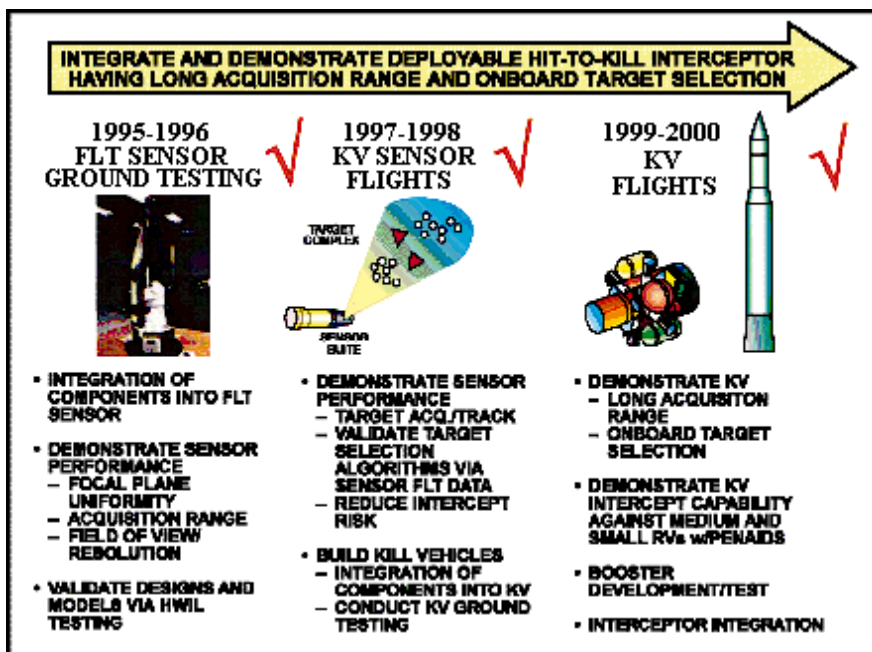
BMDO FACT SHEET 108-00-01

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## GROUND BASED INTERCEPTOR SENSOR FLIGHT TESTS: IFT-1a & IFT-2

### INTRODUCTION

The Ground Based Interceptor (GBI) project takes advantage of prior BMDO interceptor investments and accomplishments to complete development and fly the kill vehicle (KV) portion of the interceptor in FY99. The KV is the smart, nonnuclear, hit-to-kill, vehicle part of the weapon element of the National Missile Defense system. The KV contains the on-board optical seeker, data processing, guidance, and divert propulsion required to intercept long-range ballistic missile reentry vehicles (RVs) in the midcourse portion of their flight trajectories. RV destruction is accomplished by direct impact of the KV and the resulting transfer of its kinetic energy into the RV target (hit-to-kill). We have made significant progress in developing and integrating the technologies necessary to confidently demonstrate that we can kill a "bullet with a bullet." What remains to be done is to validate KV performance through flight tests.



### Ground Based Interceptor Progress

### GBI TEST PROGRAM

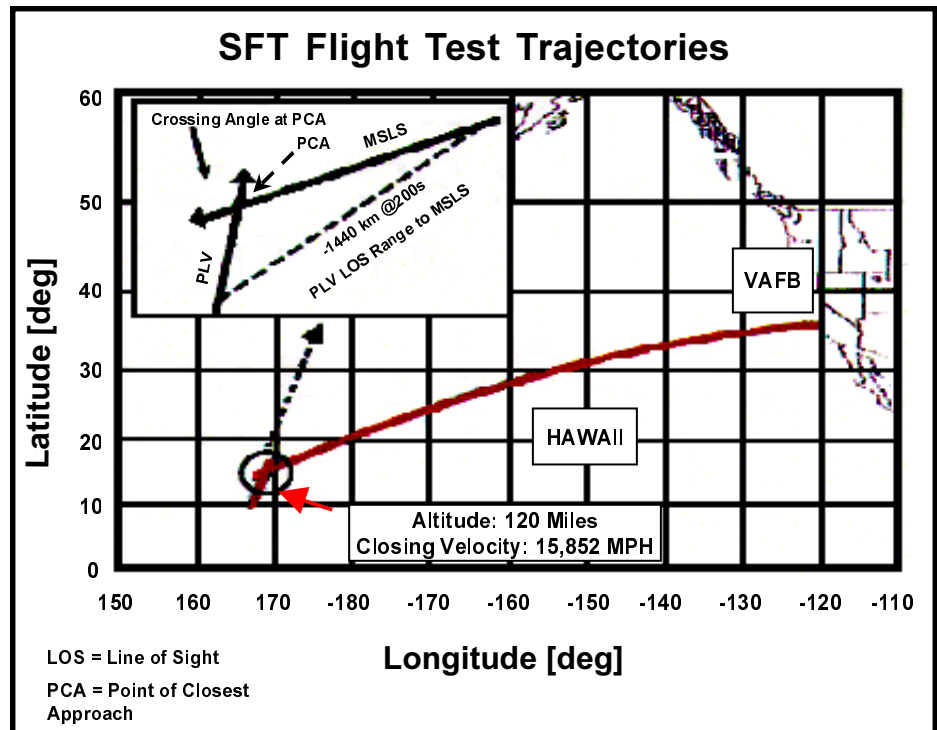
The GBI test program makes maximum use of established test capabilities (e.g., Arnold Engineering TV Chamber and Kwajalein Missile Range) to demonstrate an orderly progression/satisfaction of component-to-major-assembly requirements. Each test builds incrementally on prior test experience and test data. Two contractors (Raytheon and Boeing) are developing KVs based on distinctly different technical approaches. In late FY96 and early FY97, both contractors completed fabrication and testing of their respective sensors and supporting flight test hardware and then delivered their sensor flight test packages to the launch services and integrating contractor (Lockheed) for assembly with the Payload Launch Vehicle (PLV). Operation of the sensors was demonstrated with fly-by experiments, Integrated Flight Tests (IFT 1A and 2), to demonstrate sensor operation as it would occur in the actual mid-course engagement environment. These experiments reduced intercept flight test risk by validating sensor design and performance, and provided the data necessary to assess, while on the ground, the KV sensor capability to perform on-board target discrimination and target selection prior to intercept flights. They also qualified the targets and their respective delivery systems.

### SENSOR FLIGHT TESTS

The principal objectives of the SFTs were to demonstrate KV sensor performance, collect target signature data, and reduce risk for subsequent KV flight tests. The graphic on the next page shows the SFT flight trajectories.

## SENSOR FLIGHT TESTS [CONTINUED]

The threat target complex was launched aboard a specially configured Air Force Minuteman II, called the Multi-Service Launch System (MSLS), fired from Vandenberg Air Force Base, California, 4,300 nautical miles away from KMR. The test targets are mock warheads and associated objects designed to represent, as much as practical, the threats and associated decoy complexes that an enemy nation could launch against the United States. The PLV and its accompanying sensor payload was launched from Kwajalein Missile Range (KMR) based on data from range radars and the Global Positioning System (GPS) and guided to a point above the earth's atmosphere. The PLV nose fairing was jettisoned and the spent second stage of the PLV was re-oriented to allow the sensor package to view the threat target complex.



## SFT Threat Complex

### SFT PAYLOADS

The Boeing sensor payload, which flew successfully on 23 June 1997, is a highly sensitive, infrared silicon-based staring focal plane array.

The Raytheon sensor payload, which flew successfully on 16 January 1998, used an infrared focal plane array made of mercury-cadmium-telluride, and a visible array made of silicon. It viewed the target scene through a high performance telescope.

SFT payload test results provided technical data for validation of each contractor's KV design and performance. Additionally, post flight processing of the sensor data showed excellent medium RV selection against near term and far term decoys and penetration aids.

Each contractor's sensor payload hardware is traceable to the deployable configuration of its kill vehicle.

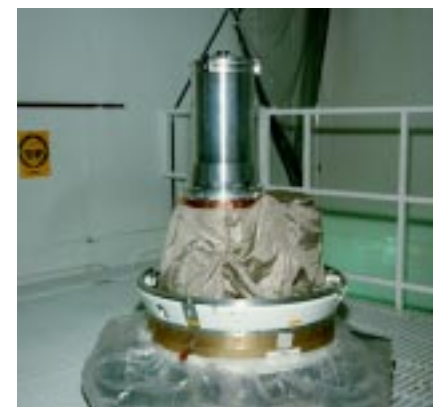
### Elements of a Potential Threat

- Large Balloon
- Canisterized Small Balloons
- Small Canisterized Light Replica
- MED RV
- Medium Light Replica
- Medium Balloon (CSO)

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Boeing SFT Payload



Raytheon SFT Payload